

**SECRET**

25 YEAR  
RE-REVIEW

IPD-0007659  
Copy 5 of 6

5 January 1959

Dear Ed,

The following has been extracted from a recent letter forwarded by the Aviation Physiologist from "C" detachment.

"Over a year ago I experienced five instances of unexplained facepiece frosting in close succession. Since both the aircraft facepiece heat system and the pilot's personal equipment operated properly during pre-flight and post-flight inspection, I decided to connect a 0-10 VDC voltmeter in parallel with the facepiece heating element. The voltmeter is fastened to the control column, below the wheel and flexible leads are snapped to facepiece terminals opposite normal facepiece heat connections. The voltmeter, thus connected, will indicate the voltage drop across the facepiece heating element and responds to changes in setting of facepiece heat rheostat.

A voltmeter offers the pilot advance warning of facepiece heat failure and the emergency facepiece heat failure and the emergency facepiece circuit can be connected in place of the normal facepiece heat attachment.

If an open circuit should occur within the plastic facepiece itself the voltmeter will not indicate the trouble. The facepiece will very likely frost in the areas of those elements with no current flow. The pilot can adjust his rheostat for maximum facepiece heat voltage (10.5) and has the knowledge that emergency faceheat would be less effective than normal faceheat in this case.

In Detachment "C", a voltmeter, as described has been used for more than a year and has been instrumental in detecting circuit breaker failure, open circuits between the QD and facepiece snap-on connectors and mal-adjustment of aircraft facepiece heat resistors. No further unexplained facepiece heat failure has occurred and I assume that the incidents of facepiece frost which led to use of a voltmeter occurred as result of pilot failure to adjust rheostat high enough. It is a well known fact that facepiece heat can be felt by the pilot and in the summertime a pilot will turn the rheostat off while on the ground. Without a reference, he may not increase facepiece heat during ascent and in time, condensation will occur. If condensation or frost does not disappear very soon after adjusting the faceheat rheostat he may very well switch to emergency faceheat and wait for results. Should the facepiece finally clear, the pilot might well assume that the normal faceheat system was inoperative. Experience indicates to pilots here that 4-6 volts is most desirable setting if all other systems are operating normally."

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Dear Ed;

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I believe that there is merit to the recommendation of having a visual warning of face heat malfunction prior to facepiece fogging. I also believe that eliminating the two additional leads to the facepiece studs required by this recommendation would be advisable. I'm thinking Ed, of a series mounted warning indicator (light or meter) that would provide immediate indication of circuitry short or amperage flow stoppage.

Please look into this matter and advise me by message of your recommendations. It would be desirable to have "C" on distribution on correspondence referring to this matter.

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DPD/DCI/RJT:mfs

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